NAEB

TV Engineering Newsletter

NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS

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NAEB ENGINEERING NEWSLETTER No. 5
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We especially invite attention of AM and FM station technical personnel to the proposed seminar for radio station operators as outlined at the top of page 15. We invite your comments and suggestions.

We'd also call to your attention the table of contents above, the article on aperture correction and the sample log for kinescope recorders.

We repeat our invitation to AM or FM engineers to contribute to these columns.

We had the promise of an article on the maintenance of tape recorders for this issue but it didn't materialize. We need articles of interest to all engineers. Please! Help!

Cecil S. Bidlack
March 8, 1956

TV Technical Tips No. 15
By Cecil S. Bidlack, NAEB TV Engineer

The Federal Communications Commission has recently placed its first mobile TV monitoring unit in operation. It was developed and constructed by the Field Engineering and Monitoring Bureau, which also operates it.

This mobile TV unit is necessary due to the fact that the Commission's fixed monitoring stations cannot monitor distant TV transmissions. It is equipped with a variety of precision electronic instruments for studying TV signals in the service areas of individual stations. These include frequency measurements, modulation measurements, wave form observations, and spectrum emission analyses to check distribution of the TV signal over its assigned channel.

In addition to aiding enforcement and checking of compliance with the Commission's TV engineering regulations, the mobile TV monitoring unit will obtain other data which will be useful to the Commission in considering various general TV problems. It will operate in and out of the field engineering districts as needed.

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The FCC has revised Part 3 of its Radio Broadcast Services rules and codified therein its Standards of Good Engineering Practice concerning Standard Broadcast Stations. This Report and Order is effective January 2, 1956. No major changes in the rules or standards are made. All the revision does is to combine in a single edition all the rules, regulations, and technical standards for the radio broadcasting services--AM, FM, TV, etc.--incorporating all outstanding amendments.

The Commission has not mimeographed or otherwise reproduced copies of this revision; hence the only means of obtaining one is to order the issue of the Federal Register in which it appears, or wait until the printed revision of the rules is put on sale by the Superintendent of Documents. We shall announce later when these are available for distribution.

****

The Commission has also finalized rule making to set forth requirements for type approval of frequency monitors for visual and aural transmitters and for modulation monitors for the aural transmitters for TV stations. The new rules become effective December 12; however in view of the fact that some outstanding monitors may not meet the new requirements, stations have until June 1, 1957, to fully comply.

The Report and Order for Docket 11094 which outlines these changes may be secured by writing to the FCC requesting a copy of public notice No. 24716.

We are indebted to Cy Braum of the JCET for bringing the above items to our attention.

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We talked to Wayne Bundy of the Louisiana Educational Television Commission at the NAEB Convention in Chicago and recently had a letter from him asking us to secure information on the operation, use, and effectiveness of the TV shutter-equipped

Auricon 1200 camera for making kinescope recordings. He's had little or no luck in securing information on this process although he's been trying to find out about it since March. We have knowledge of only KUHT in Houston and KCTS in Seattle having such equipment, and when we last heard from them neither station had achieved the results they required for on the air use of these "kines."

Mr. Bundy suggests a questionnaire to obtain a summary of the experience of those using the above equipment in connection with a high quality monitor to make kinescope recordings. Questionnaires can be a nuisance and are easily pushed back in a desk drawer. First we'll have to determine who is using this method of kine recording; then we'll be ready for the questionnaire stage.

Perhaps you are one of those making kinescope recordings with an Auricon equipped with a TV shutter, and are willing to share your experience with others who would also use the system. If so, won't you drop us a short note saying you're willing to outline your experience to help others? If you feel like going on and supplying some details of your experience we'd be happy to have them, and we'll see that Mr. Bundy and others who are interested receive them.

Otherwise we'll probably be sending out a letter to all educational TV stations and closed circuit studios with an enclosed card upon which you can indicate that you have had experience with this system of kine recording, which from the standpoint of initial investment costs less than a third of a GPL or RCA kine recorder. After that, you'll receive our questionnaire--but Bundy, and there may be others, would like the information <u>now</u>. Will you cooperate?

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While we're speaking of video recording, on November 9 Bing Crosby Enterprises Inc. demonstrated the new improvements on their TV tape recording system. This system is said to be of commercial quality now for monochrome television, but it is expected that it will be eighteen more months until the system is of commercial quality for color TV. Observers reported the color tape demonstrated gave pictures of fair to good quality, but did not equal the live pictures seen on the screen of a color TV set.

Preliminary estimates place the price of the video tape recorder at $60,000 to $75,000 as compared with $18,500 for a kinescope recorder. However, magnetic tape recording of video signals when perfected, should offer many advantages over the film method. Of these advantages, instant playback might well top the list since we could compare tape quality directly with our live pictures. Magnetic tape may also be edited quickly and easily, and it is reported that duplication is no problem. The fact that the tape can be erased and used over and over again should also contribute materially to the reduction of cost of video recordings.

As demonstrated, the video tape recorder employed the regular 3M No. 111-A audio tape except that it is one-half inch wide. Tape speed is 180 inches per second. For color recording, five tracks are used, one for each primary color, one for sound and one for synchronizing pulses. Present bandwidth recorded is 2.5 megacycles, which is coaxial cable quality; however this bandwidth is expected to be raised to 3 mc within the next year.

Others in the field apparently believe that video tape recording is still "around the corner" which monochrome television hid behind for so many years. They point out the large investment in film equipment, the huge back log of film and the large sum NBC is spending to equip its network originating studios with color film equipment.

They also point to the new DuMont Electronicam system and the growing use of multiple film camera systems using television techniques to cut cost and time in production of film programs. Only time can tell which of these systems will ultimately win out.

For the complete story we refer you to the November 14 issue of Broadcasting-Telecasting magazine.

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Many of our readers wonder why we do not include a "Swap Shop" column. We'd like to run such a column, but as you no doubt know, many educational institutions, especially those tax supported, have problems when they try to sell or swap equipment. For those interested in used FM transmitters, two used 3 kw FM transmitters are advertised in the October 31 issue of Broadcasting-Telecasting and there is another 3 kw FM transmitter listed in the November 14 issue.

Within the past week we received a list of equipment from the Gates Radio Company of Quincy, Illinois--an inventory close-out of broadcasting, recording, and test equipment, plus tubes and parts. If you are interested, I'd suggest you write directly to them for the list. The prices look right, if they have items you can use.

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Issue No. 4 of the NAEB Engineering Newsletter should be in the mail soon. In addition to material published previously in the regular NAEB Newsletter, it will contain two articles by Berten A. Holmberg, "Target Blanking Problems in Image Orthicon Cameras," and "Classifying 16 mm Emulsion Positions and Film Winds," and one by Keith K. Ketcham, "Data on Eastman 7374 Negative Film Stock".

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A new 226 page microwave manual, "Point to Point Radio Relay Systems--44 mc to 13,000 mc," originally prepared for the Air Force, is being offered commercially for $2.00 by the RCA Government Service Department, Camden, New Jersey. This manual covers propagation, interference, etc. and includes charts, curves and monograms.

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If you contemplate making Proof of Performance Measurements on your television transmitter, we have a limited supply of a paper by Alex C. Latker of the General Electric Company, which we believe will be helpful to you. It was presented at the 1955 NARTB Broadcast Engineering Conference, and is titled "A Discussion of Techniques for Making VHF Proof of Performance Measurements." Since our supply is so limited, we shall have to restrict requests for this paper to those who are chief engineers of operating television stations. Others may be able to obtain a copy from their General Electric Sales Representative.

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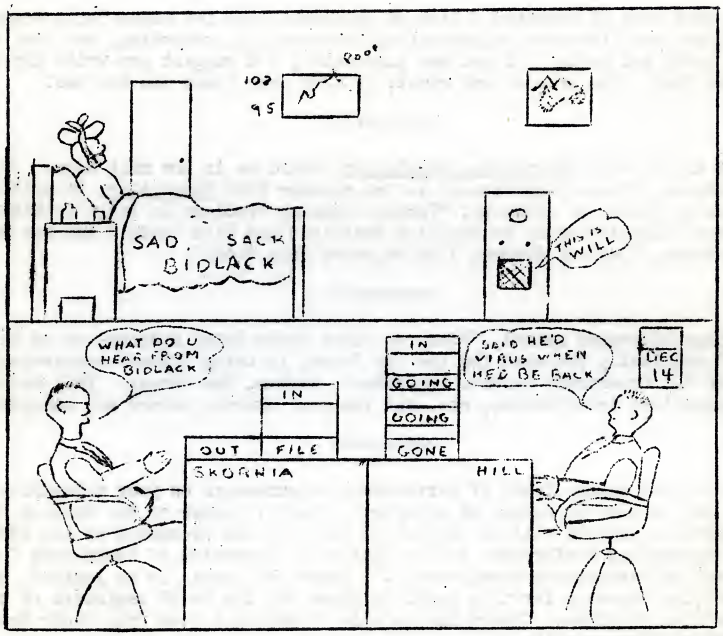
This space could have been used to list "equipment for sale" or "equipment wanted." Since we have nothing to list under either of these classifications it provides us with the opportunity to wish all of our readers

MERRY CHRISTMAS! Best Wishes for the New Year!

TV Technical Tips No. 16

By Cecil S. Bidlack, NAEB TV Engineer

We didn't expect to have much of a column for this issue as the deadline found your reporter at home battling a virus in his bronchial tubes. However, now that we're back on the job we'll be able to fill out a page. At any rate here's our tip for the month - "Never trifle with a cold virus. It just isn't healthy."



We are always happy to know that people read this column and especially so when they take time to write in answer to our pleas for help.

We were pleased to have a letter from Raymond Cheydleur of the Florida State University in answer to our request, in the December Newsletter, to hear from those using Auricon cameras with TV shutters for making kinescope recordings. They were expecting to receive their camera as this is being written and are anxious to try it out for kinescope purposes. Ray says they'll be glad to pass on their experience with the Auricon hoping that others may benefit. We'd be happy to hear from others with this equipment.

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"Cy" Braum has sent us a copy of the "Federal Register" of December 9 (Vol. 20, No. 239) which includes the AM,FM and TV rules and Engineering Standards up-to-date as of November 3. Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C. for twenty-five cents (25¢) each.

This publication is one that each Chief Engineer of an AM, FM or TV station should have since it contains Part 3 of the FCC's Rules and Regulations covering all Broadcast Services and also Standards of Good Engineering Practice of Standard Broadcast Stations. This revision is effective January 2, 1956. These rules will of course be reprinted in the usual FCC rule format and will be available from the Government Printing Office; however, at this time no date has been set.

All those considering applying for any class of broadcast license should also have the above material since necessary procedures for applications are outlined therein.

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The FCC has also proposed rule making on an approved CONELRAD Plan for Noncommercial Educational FM and the International FM Services. This is outlined in Public Notice 25602 which may be secured by writing to the FCC requesting same.

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SWAP SHOP

Elmer G. Sulzer, Director of Radio and TV Communications, Indiana University (Bloomington) would like to purchase a Western Electric 618 dynamic microphone. Since this type of microphone was discontinued a number of years ago, Sulzer would appreciate any word you might have about one being available.

***

Norman E. C. Maill, VPI Motion Picture Unit Manager has the following "slightly used," since July 1955, Bell and Howell camera equipment for sale. He states the equipment is in "excellent condition haveing had very little use to date. The usual B & H guarantee will go with it."

The equipment for sale consists of two outfits each with:

1 - 16mm Bell and Howell 70DH with single frame attachment; o.7", f2.5, Super Comat lens; 1", f1.4, Cooke Ivotal lens; 2.8", f2.3 Cooke Pancrotal lens; all with matching objective viewfinders.

1 - Bell and Howell 115 volt, 60 cy., 0.9 amp. 24fps cyncronous motor.

2 - Bell and Howell 400' magazines.

1 - Bell and Howell case which holds the camera, motor, 2 magazines and accessories.

We can sell these outfits for $1300 each, plus shipping and insurance costs.

If you are interested please contact Mr. Maill directly at Virginia Polytechnic Institute, Radio-Motion Picture-Television Service, Blacksburg, Virginia.

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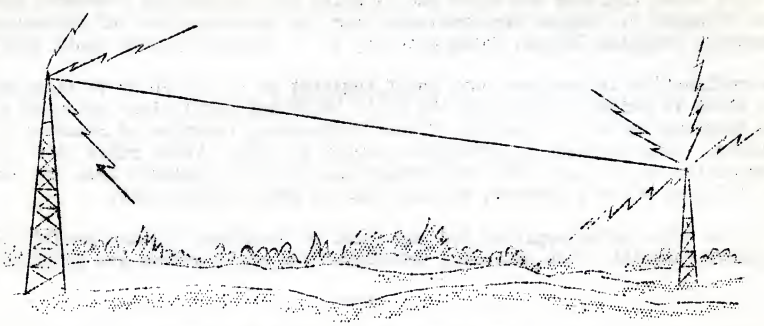


TV Technical Tips No. 17
by
Cecil S. Bidlack, NAEB TV Engineer

In an all day session in Chicago, January 7, the NAEB Engineering Committee met with all members present. Those attending were Chairman Menzer, Higgy, Kratt, Ketcham, Holmberg and Brugger. Executive Director Harry J. Skornia, JCET Consultant Cyril M. Braum and the writer also attended. As a result of this meeting several specific recommendations are being made to the NAEB Board.

Considerable time was spent putting into final form the proposed tape recorder tests which should be helpful in raising the quality of tape recordings submitted to the Network. Network Headquarters equipment and its maintenance were also discussed and recommendations made. The matter of high fidelity music tapes also was before the Committee for consideration.

Engineering workshops and seminars were reviewed and the Committee is recommending a course of action to the NAEB board.

Many other items on the agenda were discussed which will be helpful to technical personnel of educational radio and television stations.

* * *

William Ragsdale has been appointed Chief Engineer of WFSU-FM at the Florida State University at Tallahassee. He began his new duties January 1. Mr. Ragsdale will also be in charge of audio equipment for all television film production.

Mr. Ragsdale has been associated with stations WTAL and WCTV and as a result of this experience brings a wealth of practical know-how to the University. It is hoped that because of his television program production experience, Florida State University will be able to increase the scope of its radio and television offerings.

* * *

WQED, Pittsburgh, America's first community Educational Television Station, has been given a very comprehensive treatment in the latest issue (No. 86) of

Broadcast News, a publication of the Broadcast Equipment Sales Department of RCA. This issue also contains a very fine article on Planning TV Microwave Systems. Most radio and television stations receive Broadcast News; if not, contact the RCA sales representative and ask to be put on their mailing list.

* * *

We recently received advance catalog information from Kliegl Bros. on five new fixtures added to their line of lighting units. Perhaps of greatest interest to educational TV stations is the Pattern Projector, (250 to 3000 watts) with a set of sixteen different patterns which can be used to break up those blank walls on TV sets. These instruments sell from $55.00 to $130.00 depending on wattage. The complete set of 16 patterns may be purchased for $24.00. For further information write Herbert R. More at Kliegl Bros.

* * *

The "Multitape" Duplicating Equipment at Network Headquarters has now been modified so that all channels record a full width track on the tape. Work is continuing to improve the technical quality of network tapes and it is hoped that soon we may report the equipment delivering the maximum in frequency response with a minimum of wow, flutter, noise and distortion.

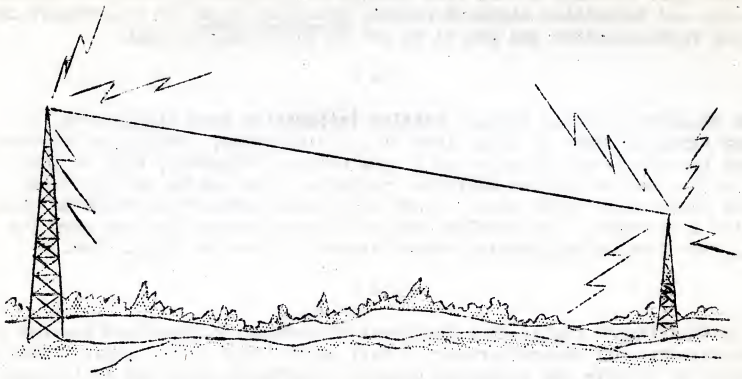
Glenn Blackburn's crew in the "back room" has begun a program of close inspection of Network tapes returned. It would make a distinct improvement in Network quality if NAEB tapes would not be rewound before being returned. This will eliminate much of the variation in tightness of wind observed by an inspection of incoming tapes and will enable us to do a better job of duplication. One of the shortcomings of our duplication equipment is that supply reel tension is a function of gravity, the amount of tape and radius of the tape unrolling from the reel. Consequently, when tape is wound with widely varying tension on the supply reels we have some difficulty which can only be overcome by a major modification of the equipment. This unevenness of wind results in wow in music especially at the start of programs because we duplicate programs backwards so that we don't have to go through the time consuming job of rewinding more than 700 tapes per week after duplication. Psychologically this is bad because many people who listen to the beginning of the program may not stay with us to the end where we do a better job as far as wow is concerned.

* * *

FCC's Technical Research Division recently revised its T.R.R. Report No. 24.15 on "Present Knowledge of Propagation in VHF and UHF TV Bands." You may obtain a copy by writing to FCC Technical Research Division, Room 7358, New Post Office Building, Washington 25, D. C.

SWAP SHOP ITEM

Clement E. LaFond of WKNO, the Memphis Community Television Station, writes that they have one DuMont TA-512 Iconoscope Film Camera chain for sale. He states that this chain has been used but was in good operating condition when removed from service. He believes that this is an excellent buy at the low price they have set. Write direct if you are interested in its purchase.



TV Technical Tips No. 18
by
Cecil S. Bidlack, NAEB TV Engineer

This month we are publishing for the first time the proposed NAEB Tape Testing Program as outlined by the NAEB Engineering Committee. It will be found on page 18 of this Newsletter. We are placing it on a separate page so that we may run extra copies for those requesting them. We shall be happy to have your comments on this proposal or you may send them direct to Carl Menzer at WSUI.

Incidentally Carl and Mrs. Menzer left February 13 for a month's vacation in Mexico. Carl's quite a booster for Mexican vacations, and he'll tell you all about the land "south of the border" at the drop of a sombrero.

*****

We'd like to call your attention to the 10th Annual Broadcast Engineering Conference to be held Monday, April 16 through Wednesday, April 18 at the Conrad Hilton Hotel in Chicago. This is held in connection with the 34th Annual NARTB Convention and is the one place an engineer can go and see the latest in radio and television equipment. Practically every manufacturer exhibits his equipment there, and in addition there is a program of technical papers presented on many items of practical interest to operating engineers. Unfortunately we don't have a detailed program, but it will be published in most technical and trade magazines soon.

Ordinarily this meeting is for NARTB members only; however through a special arrangement with NARTB, NAEB engineers may attend upon payment of a $5.00 daily registration fee. This year the Conference sessions are divided as follows: Color Television Day, Monday, April 16; Radio Day, Wednesday, April 18; Television Day, Thursday, April 19; and a

Joint-Management Engineering meeting will be held Tuesday, April 17. We'd advise you to watch for the program in the trade magazines, and if there's any chance of getting to attend for only a day, we'd advise you to go. You'll find it well worth your while.

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We spent February 15, 16 and 17 in Detroit at the invitation of Dr. Paul Rickard of Wayne University. We were there to help alleviate some of the growing pains they were suffering with the installation of a second camera chain and switching equipment. We were working with Keith Kossuth, Wayne's Chief TV Engineer, and were frequently interrupted by the production staff wanting to know when they could incorporate the second camera into their productions.

We had to leave with the intermittent operation still a problem, but apparently we were closing in on its location as Dr. Rickard reports the second camera went into service on February 21 so we anxiously await word from Keith whether the suspected peaking coil was the source of the difficulty.

If you've had to finish out a show on one live camera, without film facilities you can appreciate some of the problems of the operation at Wayne University where they've been operating on one camera since October. This type of operation is also normal at the Public Schools Studio and at Detroit University. However at the Schools Studio they have a film chain with slide and film projectors which provide some needed relief. Detroit U. was given two used DuMont chains, one of which has been completely rebuilt so that now they have two live chains in operation.

We viewed some kinescopes of Wayne U. programs. I offer my sincere congratulations to their production staff and their student crews for the results produced. With an ingenious mirror arrangement attached to their single live camera, they were producing horizontal wipes from a speaker to close-ups of small objects. They projected slides through the control room window into a shadow box with a minimum of black between live talent on camera and slides. And now with two live cameras their producers will really go wild. It all goes to prove that seemingly impossible things are possible if there is the determination to do them.

We had a meeting Friday afternoon (17) with technical personnel of the Detroit Educational Television Foundation at the Public Schools Studio and the Foundation transmitter. They were all on hand to discuss their operational problems - Dean Cook and his studio crew, Gordon Ward, Clem Grzywacz; Joe Jankowski, Jr., and Irving Laing, who operate the transmitter, Bill Grover, the kinescope recorder technician; Roland Renaud and Joe Kiss of the University of Detroit; Keith Kossuth of Wayne U. and the writer. I came away with the impression that educational TV is going places in Detroit.

The Federal Communication Commission needs field intensity measurements on television frequencies. Since this data is no longer required in proof of performance tests, the FCC is unable to revise transmission data in the light of actual measurements as they would prefer. If you have field strength data on your educational TV or FM channel, they would be glad to have it in their files. We're sure they would respect your wishes and keep it confidential if you wish since they maintain a public file and a confidential file. Some of your Electrical Engineering Departments, too, might cooperate with the FCC in transmission surveys done as laboratory or thesis work.

*****

The FCC has partially revised Part 15 of its rules which concern incidental and restricted radiation devices to avoid interference with authorized radio services.

Of greatest general public interest in the new rules is the limitation of amount of permissible radiation from radio receivers operating between 30 and 880 megacycles, which includes FM and TV receivers. Rules, with certain exceptions, will be applicable to all receivers 30 to 880 mc that are manufactured after March 1, 1956. The rules require each receiver to carry a seal certifying compliance with Commission regulations.

*****

Harold Gorsuch of the WOSU-TV staff graces the cover of the February Ohio State University Monthly, the official Alumni publication of the University. He's seen behind a WOSU-TV camera which is looking for someone to become Dean of Broadcasting at Ohio State. The story gives full picture coverage on the WOSU-TV facilities and is headlined: WANTED, TOP Man for TOP Job. The lead for the story is the want-ad which follows:

"WANTED: Man with experience in commercial television, with flair for showmanship AND thorough understanding of educational concepts; must be dedicated to development of possibilities in educational television. Position: heading educational broadcasting at state university. Salary: good. Working conditions: excellent."

The WOSU-TV facilities were designed and installed by Robert C. Higgy, director of WOSU, who will serve as an interim director and then take over the combined technical direction of WOSU and WOSU-TV when the above position is filled.

It isn't exactly red hot news but Berten A. Holmberg has been named Chief Engineer of the Twin City Area Educational Television Corporation which will operate the Channel 2 ETV station in Minneapolis-St. Paul. Bert has been Acting Chief Engineer for TCAETVC since July 1, 1955, and for eleven years prior to that was Chief Engineer for KUOM - the University of Minnesota radio station.

Bert is married and has two children. He received a BEE degree from the University of Minnesota in 1944. He is a member of the Society of Motion Picture and Television Engineers, an alumni member of Kappa Eta Kappa, Professional Engineering Fraternity, a member of the NAEB Engineering Committee and in his spare time operates amateur radio station WØROR.

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More news from the "land of sky blue waters."

Lawrence A. Brogger has been appointed Chief Engineer of KUOM effective February 6.

Lawrence (Larry) A. Larson has left KUOM to join the DuMont Company. He will be on the road with its Vitascan demonstration team.

William G. (Gordy) Benson has also left KUOM to join KSTP-TV in St. Paul as a maintenance technician.

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Note for program chairmen of professional societies: Mr. Cyril N. Hoyler, Manager, Technical Relations, RCA Laboratories, Princeton, N. J. spoke here on the University of Illinois campus on "The Principles of Color Television." This was a joint AIEE - IRE Student Section meeting. Mr. Hoyler is an excellent speaker and gave a very interesting as well as entertaining demonstration of transistor devices as well as color TV principles. If you have an opportunity to hear him, don't miss it. Or perhaps you could persuade him to give his talk and demonstration at one of your professional society meetings.

*****

Thomas Norwood, formerly an engineer with WJRD, Tuscaloosa, Ala., has been employed as a full time assistant engineer with the University of Alabama Broadcasting Services' television studios.

PROPOSED NAEB TAPE TESTING PROGRAM

Test tapes should be sent to Mr. Edward Kratt, Radio Station WNYE, 29 Fort Greene Place, Brooklyn 1, New York. They should carry an indication of the make, model and serial numbers (both transport mechanism and amplifier) of the recorder used as well as make, model and serial numbers of the test oscillator used.

Tapes should be recorded at 7 1/2 inches per second.

Recording levels should be maintained as indicated below. "Reference recording level" for these tests is defined as the level indicated by maximum peaks on the recorder VI meter. This is usually 0 DB. If a different maximum recording level is used, please so indicate. Record test tapes as follows:

1. (A) At reference recording level, record two minutes of continuous 400 cps tone.
   (B) At 10 DB above reference recording level, record two minutes of continuous 400 cps tone.
   (This may easily be done by inserting a 10 DB pad between oscillator and amplifier for step A and removing it without changing amplifier gain for step B. As the VI meter will doubtless go off scale for step B, one terminal of the VI meter may be disconnected.)
   (The above to establish reference level and to check distortion)

2. Two minutes of no recorded sound (blank tape) accomplished by disconnecting the oscillator and terminating the input of the recording amplifier with a matching resistor.
   (To check noise)

3. At 20 DB below reference level, record one minute of continuous 5000 cps tone followed by two minutes of continuous 7500 cps tone.
   (To check head alignment)

4. At 20 DB below reference recording level, record continuous tones as indicated below. Test oscillator output should be held constant.

400	cps	30	seconds	4000	cps	10	seconds
50	"	10	"	5000	"	10	"
100	"	10	"	6000	"	10	"
200	"	10	"	7500	"	10	"
500	"	10	"	10000	"	10	"
1000	"	10	"	400	"	10	"
2000	"	10	"				

   (To check frequency characteristic)

5. At 20 DB below reference recording level, record five short pulses of 3000 cps tone one second apart. The start of the fifth pulse will be used as a starting time reference.
   After a few seconds silence, record a 3000 cps tone for approximately 14 minutes followed by another few seconds of silence.
   Then, record five more short pulses at one second intervals with the start of the fifth pulse exactly fifteen minutes after the starting time reference noted above.
   (To check timing, flutter and wow)

THE USE OF APERTURE CORRECTION IN LIVE BROADCASTING AND KINESCOPE RECORDING

by Keith K. Ketcham
Chief Engineer, WOI-AM-FM-TV

Recently we have had inquiries as to the feasibility and the use of aperture correction in kinescope recording. Aperture correction or aperture equalization is needed in television systems because of the finite size of the scanning spot in either the television camera or the reproducing kinescope. Generally, an oversize scanning spot results in loss of picture detail. With the lack of detail caused by a large scanning spot, there is associated an equivalent filter characteristic that describes this loss. Theoretically, we can design an equalizer to correct for this filter loss. Practically speaking, the amount of allowable equalization depends on the noise threshold, since enhancing the gain to make up for loss of higher frequencies also enhances the noise. Usually, a scanning spot has circular symmetry. This means that the equivalent filter characteristic is one that has linear phase. If the amplitude equalizer is not to cause phase distortion, then it must have linear phase (constant delay) at all frequencies.

The aperture corrector may readily be used for "crispening," that is, for the kind of over-emphasis of the high frequencies which improve the subjective sharpness of some types of pictures. In experiments performed here at WOI-TV, we have found that, as an example, a live camera shot of a subject with a complex background, such as a bare winter tree, or other fine detailed type background, the use of the aperture corrector would cause the individual limbs on the tree to "crispen" and stand out in sharp relief. Whereas, without the aperture corrector, they appear to be out of focus due to normal depth of focus problems inherent with lens systems. In other types of pictures, which show the effect of the aperture corrector very markedly, the subject wore a black and white striped tie. Through the use of the aperture corrector, the tie, itself, was made to stand out like a "barber pole"; whereas, it had more or less a soft appearance without the use of the aperture corrector. One other situation, which points out the need for and the good use of an aperture corrector, was evident upon doing a remote broadcast. One case in particular concerned the pickup of a basketball game, in which the camera was unable to obtain the medium close-up shots that the director wanted. Without aperture correction, the figures on the shirts of the players were quite small, and, as a matter of fact illegible, but, through the use of the aperture correction, these figures were plainly legible on the control monitors and the final air picture.

When using the aperture corrector for kinescope recording, it is adjusted to give the maximum increase in sharpness or apparent sharpness commensurate with the appropriate signal to noise ratio. The instrument, itself, is inserted between the studio cameras and the input of the kinescope recorder. In our particular case here at WOI-TV, we found that it was very undesirable to attempt any type of aperture correction on pictures which were obtained from an iconoscope film chain. The reason for this is quite obvious, and that is the iconoscope, itself, is extremely noisy. Those stations using vidicon pickups for film will find that the aperture corrector, itself, can be used to great advantage. The flying spot scanner type film pickup, of course, is a "natural" for the use of an aperture corrector.

Although it is very hard to evaluate the precise effects that an aperture corrector may have on kinescope recording, our observations have shown that it enchances the over-all sharpness of almost all types of live pictures and the final kinescope, whether it be positive or negative, has a considerably higher degree of sharpness than those kinescopes made without the use of an aperture corrector. As you all know, the resolution practically obtainable on 16mm kinescope recording at the best is very poor, and through the use of the aperture corrector, one can help the situation along, but, of course, not completely kill this particular ill.

*****

Here's a letter from "Bud" Phillips, Chief Engineer, of the Television Center at the State University of Iowa at Iowa City, which should be of interest to our kinescope recorder operators.

"We have tried something out here which may be worth passing on to others. We have secured very good results from the new Eastman 7374 film stock which we have been using for negative video recordings. As you know, most of our prints are projected on screens far more than they are used on television film chains. For this reason I believe that we have been trying for a little more contrast than most kine operators. We find that we can get a flat print from a contrasty negative by changing printer lights but of course it is difficult to go the other way.

"After making a projection print on our standard 7302 print stock, we recently printed the same show on master positive stock Eastman 7365. The results were very gratifying. It has terrific resolution and squeezes everything out of the negative that is there. In addition it is flatter. It never goes to black or white but the gray rendition in between is excellent. I think it makes an excellent television print. Cost wise it is not prohibitive. It costs us about two-tenths of a cent more per foot. I think it is worth it."

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Merlyn Rawson, Chief Engineer, Department of Telecommunications of the University of Southern California at Los Angeles sends a note I'm sure will be of interest to vidicon camera operators who have been using 3RP-1 (green) Viewfinder Tubes.

"I have found that it is now possible to obtain 3RP-4 (white medium phosphor) tubes to replace the 3RP-1 by special order to the Vacuum Tube Products Company, Inc., 506 South Cleveland Street, Ocean Side, California."

His letter aroused my curiosity and I looked them up in an RCA Tube Manual and found both of these tubes listed there too. A local distributor gave me a price of $17.30 on the 3RP-1 and $18.50 on the 3RP-4. I'm sure that the tube with the white phosphor would be well worth the additional cost.

*****

We have available a mimeographed paper describing the WOI-TV Composite Gray Scale Generator complete with schematic. These have been sent to all TV stations and production studios with kinescope recorders. If we missed you we'll be happy to send you a copy upon request.

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Attention operators of small AM or FM stations! You will be interested to know that the NAEB Engineering Committee has recommended that funds be allocated for a Seminar or Workshop for AM and FM station engineers and technicians. The NAEB Board now has this request under consideration.

If funds are allocated for this purpose, it is proposed to hold such a seminar in June. All, or the major portion, of the participants' expenses would be paid. The seminar would be of three to five days duration and in general would cover AM and FM transmitters, audio equipment, tape recording equipment and possibly test equipment. The aim of the seminar would be the upgrading of technical personnel by demonstrating how they might maintain and improve the quality of their studio and transmitting equipment.

The NAEB Engineering Committee believes that this seminar should be limited to those persons actually operating and maintaining the equipment. Much has been done for the upgrading of television personnel. The Committee believes such a meeting would fill a great need by supplying wanted technical information as well as boosting morale of those from member radio stations who form such a large group in NAEB membership.

If you are interested in attending such a seminar, we'd be glad to have your comments and suggestions for the program.

*****

On the following page you will find a sample Kinescope Recorder Log suggested by Mr. Joseph Belcher of the General Precision Laboratory. No doubt most kinescope operators are using a log similar to this. However if you're not, we strongly advise that you keep some type of log. Let me quote what Joe says about this log:

"I think it is self-explanatory and that you can see why I included certain items. On the whole, a continuous record of these sheets gives you an excellent background of data from which to work as well as providing day to day checks to ascertain the consistency maintained by the operator and the processing lab.

"The roll number and emulsion number are important for recording data and will often indicate the reason for density changes when all other data is consistent.

"If sound is magnetic no other comment is required, otherwise the test density readings are a double barreled check on the operators. First you can see if they are consistent, second, by noting changes in lamp current to hold the density, you can predict changes in advance based on experience.

"The information on picture size, high voltage, bias, beam current, brightness and density for both black and white are self-checking features as well as controls for consistency; i.e., if high voltage, bias and beam current are the same as past records show to be correct and brightness is different, the operator can recheck picture size. If he doesn't, you will catch the error in the density checks. The equivalent bias (white) checks the operator's calibration and testing techniques."

KINE LOG

Production Source_____

Prod#:_____ Date:_____ Process:_____ Hold:_____
Neg. or Pos.

Program:_____ Time:_____ Footage:_____

Emulsion#:_____ Roll#:_____ Magnetic Sound_____
Mfr. Name and Model

Film Sound_____ _____ _____ _____
AGN Current Lamp Current "TEST" Density "OFF" Density

Vacuum:_____ Sound Level_____ Pix Sound_____

Position:_____ H.V._____ Bias (Black)_____

Beam Current (Black) Last _____ Brightness (Black)_____

F-Stop_____ Optical Focus_____ Kine Focus_____

Grid Voltage P/p_____

Equivalent Bias (White) Black plus Grid Voltage _____ Brightness_____

Density (Black Level)_____ Density (White Level)_____

Shutter Corr:_____

RECORDING DATA	REVIEW DATA
Pix Focus_____	_____
Camera Balance_____	_____
Pedestal Balance_____	_____
Transients_____	_____
Noise_____	_____
Streaking_____	_____
Ringing_____	_____
Burn Ins_____	_____
Shutter Bar_____	_____
Scratches_____	_____
Sound_____	_____
System Comments_____	_____
_____	_____

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